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CUSTOM FABRICATION OF STAINLESS STEEL FOOD SERVICE EQUIPMENT

A Manufacturing Possibility in Carroll County, Georgia

by

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Foreword

The fourth in a series of special product-industry studies, this report explores the possibility of expanding the existing metalworking industry in Carroll County to include a plant for custom fabricating stainless steel food service equipment. This possibility is enhanced by Carroll County's market accessibility, manpower availability, and metalworking experience.

Earlier studies in the series dealt with the feasibility of producing wooden pallets and asphalt and vinyl asbestos floor tile in Carroll County and with an evaluation of agriculturally oriented and wood-based manufacturing opportunities. The final study will investigate injection molding of plastics products as a manufacturing possibility for the county.

This report is part of the second year's work of an Area Redevelopment Administration "demonstration" project designed to increase employment opportunities and to boost the Carroll County economy through a three-year research-technical assistance-action program. In addition to technical assistance projects with five established firms in the county, basic studies have been made of industrial sites, retail and wholesale trade, park and recreation facilities, manufacturing operations, and economic resources of the seven incorporated cities in the county.

Comments or questions regarding this report or the over-all study are invited.

Kenneth C. Wagner, Chief
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Summary

A plant for custom fabricating stainless steel food service equipment in Carroll County should net $19,100 (including interest paid) on sales of $300,000. Return on the recommended total capital investment of $140,000 would be about 13%. The plant could combine the advantage of access to the growing southeastern market with an attractive labor situation.

Food service equipment is used by restaurants, cafeterias, hotels, hospitals, and similar operations in both private and public buildings. Sold by the bid system commonly used in the building industry, food service equipment may be made from a variety of materials and in a variety of qualities, but custom fabricators may specialize in equipment with stainless steel surfaces.

Custom fabrication of stainless steel food service equipment follows the long-term and seasonal cycles of the construction industry in general. It is highly competitive, and its products are fabricated by a large number of small companies. Operations required to produce custom-fabricated food service equipment are (1) drafting of shop drawings, (2) layout, (3) cutting, (4) forming, (5) joining, and (6) finishing.

Carroll County's five existing metalworking firms produce products ranging from wire to custom castings; one provides anodizing and plating services. The firms pay an average wage of $1.70 per hour for production workers. Management is generally well satisfied with the quality of the local labor force, and none of the companies has had difficulty in recruiting numbers of workers.

The county's transportation and distribution facilities include some 24 motor carriers with certificated interstate operating rights. All of the important market areas likely to be served by a Carroll County food service equipment fabricator can receive delivery on the first morning following the day of shipment.

A plant capable of producing about $300,000 worth of custom-fabricated stainless steel food service equipment would require a maximum capital investment of $220,000, a minimum of about $125,000. The variation depends largely on whether the required 15,000-square-foot building is purchased, rented, or leased.

Manpower requirements include 13 direct workers and six indirect workers and administrative personnel. Wage rates for direct workers are projected in a range from $1.80 to $2.70 per hour for the seven mechanics and metalworkers, and from $1.40 to $1.80 for the six apprentices or helpers. Annual cost of direct labor would amount to about $63,000. About $41,000 is allocated for indirect labor and administrative personnel.

Direct materials and supplies account for the largest portion of total costs, equivalent to nearly 40% of sales. It should be possible to effect savings on this manufacturing output, thereby increasing profits and return on investment significantly for a manufacturer in Carroll County.

INTRODUCTION

This report was undertaken as a vehicle for presenting information on the advantages which Carroll County offers the metalworking industry. Advantages which the county's existing metalworking industry have enjoyed are reported to provide a general setting.

The particular kind of metalworking which is discussed -- custom fabrication of stainless steel food service equipment -- was selected because of the growing market for such products in the Southeast. Growth is due not only to the general growth of the food service industry, but also to the increasing emphasis of food service establishments on the appearance of kitchens and related equipment.

Custom fabricators of food service equipment generally concentrate on nearby markets and seldom sell outside of the region in which they manufacture. A company in Carroll County could expect to sell 50% of its output in Georgia, 25% in Alabama and Florida combined, 15% in the Carolinas and Tennessee, and perhaps 10% outside of these states, if it sold directly to customers. If it sold through dealers, its markets still would be largely within the Southeast, although more dispersed within the region.

Atlanta is likely to be the major single market concentration, purchasing up to 30% of total output. The city is one of the fastest growing markets for food service equipment in the United States. Although Atlanta ranks 24th out of the top 30 metropolitan areas in sales by eating places, it ranks second in rate of growth in recent years.

This report is designed to provide a general picture of requirements and costs involved in establishing and operating a small-scale plant for custom fabrication of stainless steel food service equipment in Carroll County, Georgia. It should provide sufficient information to help businessmen and other leaders determine whether the potential deserves more detailed attention.

Plans for actual development and installation of a plant will require additional engineering and financial advice.

CUSTOM FABRICATION OF STAINLESS STEEL FOOD SERVICE EQUIPMENT

Products and General Description of the Industry

Food service equipment is used by restaurants, cafeterias, hotels, hospitals, and other similar operations in both private and public buildings. Products include cafeteria counters with built-in display and service fixtures, dish tables with built-in washing and storage facilities, food preparation equipment (such as baker's tables, spice bins, sinks, drainboards, cook tables, work tables, preparation tables, pot racks, range hoods, and storage racks), backbar equipment, plate warmers, utility carts, water coolers, and waitress stations.

Sales of food service equipment are generally made by the bid system commonly used in the building industry. In order to communicate with general contractors, building owners and promoters, architects, and building consultants specializing in the food service industry, manufacturers of food service equipment frequently publish brochures which present general and detailed specifications for the types of equipment they fabricate. Details published by a single company may be used verbatim in the bid specifications drawn up by the architect and let by general contractors. Although this practice gives some advantage to the food service equipment fabricator whose specifications are used, competing fabricators are generally free to submit bids.

Materials specified for the exposed surfaces of food service equipment may include stainless steel, various types of galvanized and paint-grip steel, and wood. Custom fabricators who specialize in equipment with stainless steel surfaces will use other materials for structural members. Frames, for example, may be made from galvanized angles and are coated with a rust inhibiting finish. Drawer pans and hidden panels may be made from galvanized sheet, and some trim and counter legs may be fabricated from polished aluminum alloys.

Certain general specifications are usual in bids tendered by food service equipment manufacturers. Equipment must conform to standards established by the National Sanitation Foundation. Before fabrication is begun, the equipment fabricators must verify all dimensions at the job site and submit detailed shop drawings to the building architect for approval. All final connections, including plumbing fittings, ventilation ducts and fittings, and final connections from the point of roughing in to the equipment, are furnished and installed by

other companies. However, the food service equipment must be put in place and all necessary field joints must be welded, ground, and finished by the fabricator. In practice, the fabricator frequently subcontracts this portion of his contract. It is also usual for the fabricator to warrant his equipment to be free of material and manufacturing defects for a period of one year.

Custom fabrication of stainless steel food service equipment is a cyclical business. Variations in activity follow both the long-term and the seasonal cycles of the construction industry in general. Consequently, output must be greatest in the summer months. The winter decline in contract work may be used to install new metalworking machinery and repair old machinery, to make general shop improvements, and to produce some of the more commonly sold equipment components for which future sales are anticipated.

The industry is highly competitive in the United States, and its products are fabricated by a large number of small companies. Because of high shipping costs, companies generally cannot sell at a desirable profit outside of the region in which they manufacture. It is, of course, most desirable to concentrate sales in local markets.

Manufacturing Operations

The operations required to produce custom-fabricated stainless steel food service equipment are (1) drafting of shop drawings, (2) layout, (3) cutting, (4) forming, (5) joining, and (6) finishing.

After an order has been secured by the company, shop drawings or blueprints are made which show in detail the specifications for the finished product and its parts and the way in which the parts are to be laid out on the stainless steel sheet.

Before the actual metalworking operations can be started on any project, it is necessary to draw layouts -- accurate outlines of the various parts on the material to be used. Procedure generally includes preparing the surface so that all scribed lines will be clearly seen, locating center lines, scribing lines where cuts are to be made, indicating the internal areas to be removed, locating centers for holes, and drawing lines where the metal is to be bent.

Cutting operations are performed by mechanical means, including straight-line shearing, ring or template shearing, band sawing, and blanking. Those

portions of the shears, saws, and punch presses which hold the work in place should be permanently covered with felt-like material to help prevent marring of the work. The same purpose may be achieved by applying protective coatings to work surfaces.

Cold forming or bending of stainless steel sheet parts may be performed in a press brake. Operations on stainless steel require more power than operations on carbon steel because of the higher yield strengths which must be overcome to produce permanent plastic deformation. In addition, greater allowance must be made for spring-back. As is the case with cutting operations, care should be taken to preserve the appearance of the surfaces of the work.

Almost all joining of stainless steel seams on food service equipment requires welding. Welding is also the predominant method for installing partitions, even when they are of dissimilar metal. For some applications, room temperature methods, such as lock seaming, cold riveting, and other fastenings, may be desirable.

The assembled unit is subjected to various grinding and finishing operations. All welded seams are cleaned and ground smooth, burn marks are removed, and the entire surface is repolished to the original finish. All exposed metal surfaces not fabricated from stainless steel are cleaned, prime coated, and painted.

Methods of preparation for shipping vary considerably throughout the industry. A custom fabricator in Carroll County should be able to ship units uncrated to most customers. Completed units may simply be protected with pads and loaded directly into the vans of the selected carrier.

Throughout all of the fabrication process, stainless steel surfaces must be kept clean in order to maintain the high corrosion resistance of the metal. Foreign materials on floors, residues on grinding and polishing wheels, spatter from welding, and such things as grease and machine lubricants should be kept from contaminating work surfaces.

CARROLL COUNTY AS A METALWORKING LOCATION

Although heavily dominated by two traditionally southern low-wage industries -- apparel and textiles -- Carroll County's industrial complex is gradually being strengthened by the steady formation and growth of firms in other industries. Much of the credit for restructuring the county's industrial base belongs to the metalworking industries that have located plants in the area in recent years. Three primary metals and two fabricated metals operations have been established since 1950. Employment in these industries jumped to over 900 in 1962 from zero in 1950, the year the first plant was built.

The largest metalworking firm in the area was conceived, promoted, and developed by a native of the area. A producer of hardware fittings and custom castings was originally established at another location in the Southeast, but moved to Carroll County in 1953. The other three firms were built and are being operated as branch plants. A manufacturer of stainless steel tubing is the newest of Carroll County's growing metalworking group. A national producer of automobile trim selected Carrollton as a site for a branch plant in 1955. The successful operation of this facility was no doubt a major factor in the decision to invest in an affiliate to provide anodizing and plating services. In operation since 1959, this firm had a major expansion in 1962.

An audit and evaluation of manufacturing operations in Carroll County,[1/] performed in 1962, covered four of the county's metalworking firms. It excluded the stainless steel tubing company, the newest addition to the area. Although no direct statements were made by two of the firms regarding their reasons for locating in Carroll County, a strong motive for all four companies was fairly obvious -- the favorable manpower situation in the area.

The average wage for all metalworking production workers is roughly $1.70 per hour, considerably more than wages received by workers in other industries in the county, but below state and national averages for the metalworking industry. Wages of the highly skilled employees, such as tool and die workers and machinists, range up to $3.00 per hour.

1/ M. Dale Henson and Robert H. McDonough, Audit and Evaluation of Manufacturing Operations in Carroll County, Georgia, Industrial Development Division, Engineering Experiment Station, Georgia Institute of Technology, Atlanta, Georgia, February 1963.

Managers of the existing metalworking firms are generally well satisfied with the quality of the local labor force. In some cases the workers are highly praised for their trainability, productivity, dependability, and attitude toward their jobs. Other managers report that the local workers are no different in these characteristics than those workers in other sections of the country. In one case the local workers were criticized for their poor characteristics. In those firms that have had experience with labor unions, it is easily deduced from their guarded comments that the lack of union activities in Carrollton is reason enough in itself for better management-labor relations and increased productivity. Aside from this factor, it is safe to generalize that most employers value very highly those attributes of dependability, job attitude, and eagerness to learn that are not so pronounced in the more mature industrial regions.

None of the companies have had difficulty in recruiting numbers of workers, but there are few to be found with previously acquired skills. This came as no surprise to the firms -- they knew the low skill and educational levels before they located there. In fact, most employers preferred to train their own production workers. An attempt is made to recruit workers from the Carrollton area, but in some cases workers commute from Alabama as well as from contiguous counties. The great majority of employees live within a 15- to 20-mile radius of Carrollton, however.

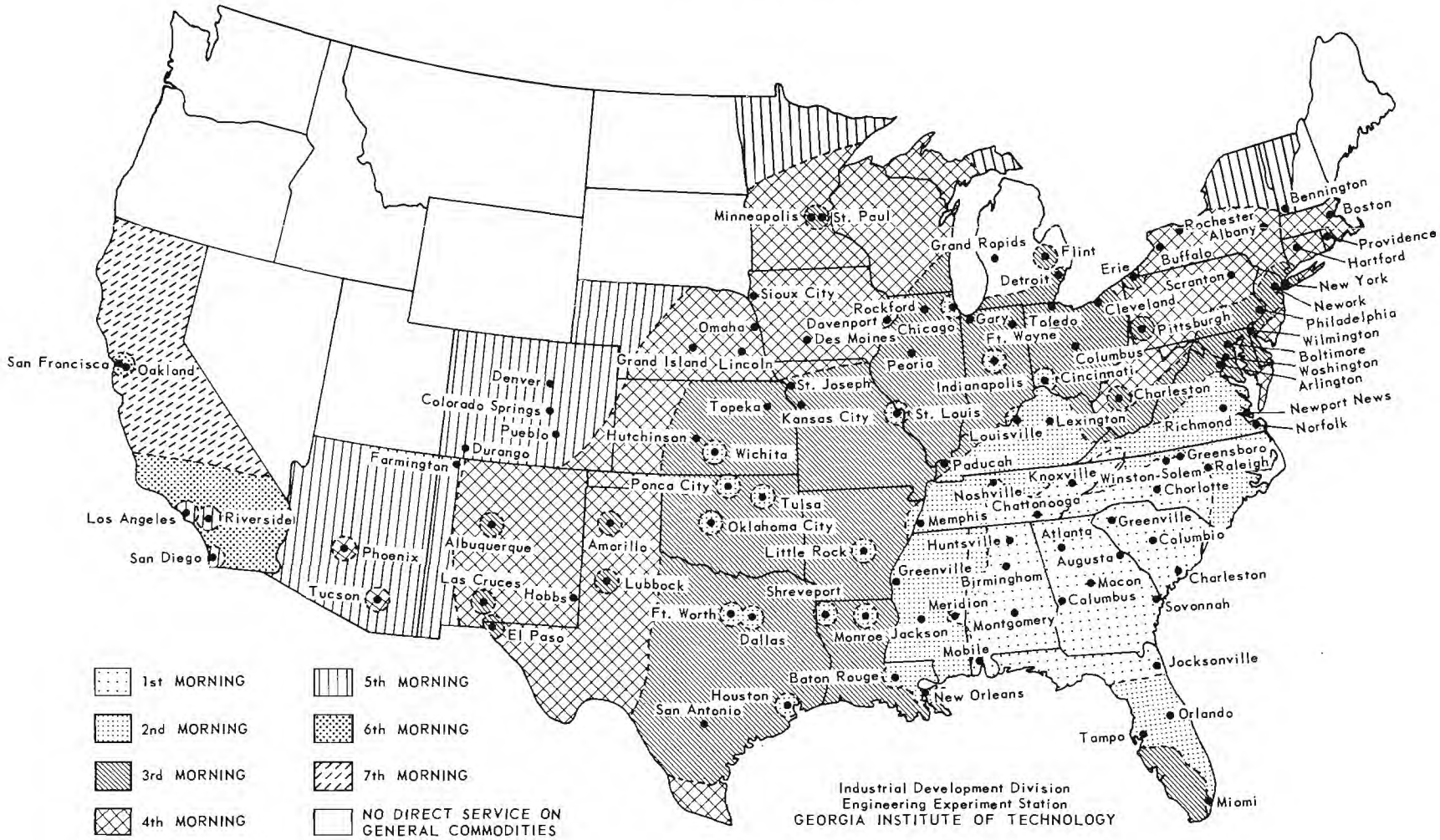
In addition to an advantageous labor supply situation in the area, other factors favoring Carroll County as a location for the metalworking industry include proximity to Atlanta's distribution facilities, regional sales offices, and markets, and proximity to sources of raw materials in Birmingham, Gadsden, and Lister Hill, Alabama.

The county is bisected by Interstate Highway 20, which connects with the southeastern system via such major interchange centers as Atlanta and Birmingham. Some 24 motor carriers have certificated interstate operating rights to transport "general commodities" with the "usual exceptions" directly to and from Carrollton. Transit times on less-than-truckload shipments from Carroll County are approximately as shown on Map 1. First-morning delivery is available to major local markets and to a large part of the Southeast.

MAP 1

TRANSIT TIMES ON DIRECT LESS-THAN-TRUCKLOAD SHIPMENTS

Base Point: Atlanta



Companies in the metalworking industry have been sufficiently pleased with their locations to invest in increased capacity. Three of the four firms have expanded almost continuously since their establishment in Carroll County, and at the time of the survey of manufacturers, a total of 105,000 square feet of floor space was being added in the industry. This figure does not include the facilities of the newest metalworking firm in the county. Further, several thousand square feet of operating floor space had been added during the previous year. According to the survey results, officials of the metalworking firms are generally optimistic about the future of their operations in Carroll County.

REQUIREMENTS AND COSTS FOR A PLANT IN CARROLL COUNTY

Plant Capacity and Size

The plant for which cost information is presented in this report is capable of producing about $300,000 worth of custom-fabricated stainless steel food service equipment annually. The figure excludes those operations in which the company would be merely a transfer agent. For example, those portions of contracts which call for equipment installation are excluded from the sales figure, since it is assumed the company will subcontract installation work. Also, in the case of contracts requiring the company to purchase refrigerators, stoves, and other appliances used as the base for the custom fabrication work, the cost for such ready-made items is not included in the $300,000 annual sales figure. Such costs are also not included as raw material purchases.

Such a sales volume can be produced in a plant comprising 15,000 square feet of floor space, including 14,000 square feet of production and storage area and 1,000 square feet of office space.

Capital Requirements

It would be possible to establish a stainless steel fabricating plant in Carroll County with a small amount of equipment and a small amount of capital by subcontracting large portions of the necessary work. Performing all but a small part of the fabrication in plant is likely to be more profitable, however.

Capital requirements for establishing a plant for the custom fabrication of stainless steel food service equipment in a new building with a full range of new equipment and adequate working capital total about $220,000. Detailed allocation of the total is presented in Table 1. The building and working capital each accounts for about a third of the capital requirements, with the remaining third being used for tools, equipment, fixtures, and furniture.

Obviously, the simplest and soundest way to lower capital requirements is to rent or lease space instead of purchasing it. A smaller saving can be achieved by purchasing good used equipment. Combined savings could be about $90,000; it is possible to begin production on the scale indicated with a minimum total capital investment of $125,000, including fixed capital of $60,000.

Table 1

CAPITAL REQUIREMENTS FOR A STAINLESS STEEL FOOD SERVICE EQUIPMENT PLANT
($300,000 annual production capacity)

Fixed Capital			
Land		$ 2,000	
Building (15,000 sq. ft. at $5 per sq. ft.)		75,000	
Production Tools and Equipment:			
Metal shear (1)	$ 9,000		
Press brake (2)	30,000		
Punch press (2)	5,000		
Portable welding equipment (4)	1,600		
Spot welder (1)	700		
Water-cooled welder (1)	1,300	47,600	
Auxiliary Equipment:			
Complete air system	$10,000		
Grinding tools	3,000		
Fork lift	5,000		
Chain hoist and other handling and auxiliary equipment	3,500	21,500	
Installation:			
Installing equipment and wiring, pipe, and foundations associated with equipment		5,000	
Production and Office Furniture and Fixtures		2,500	
Total Fixed Capital			$153,600
Working Capital			
Direct Materials (90 days)		$28,800	
Direct Labor (60 days)		10,500	
Other Manufacturing Expense (60 days)		9,800	
Selling, General, and Administrative Expense (30 days)		3,800	
Training Costs		5,000	
Contingencies		6,000	
Total Working Capital			63,900
MAXIMUM TOTAL CAPITAL			$217,500
RECOMMENDED TOTAL CAPITAL (see text)			$140,000

The recommended procedure would be to lease a building constructed to the company's specifications, but to purchase largely new equipment. Capital requirements would total about $140,000. Return on this investment would be about 13%, compared with less than 9% for the full $217,500 investment. (See section entitled "Annual Costs and Profits.")

Manpower Requirements

Direct Labor. Operation of this plant will require 13 direct workers, including about seven mechanics and metalworkers and six apprentices or helpers. When the plant reaches full capacity, wage rates in Carrollton should vary from $1.80 to $2.70 for the skilled workmen and from $1.40 to $1.80 for the trainees. Annual cost of direct labor would amount to $63,000, including approximately 3,000 hours of overtime at one and a half times the standard wage rate.

The seven skilled workmen should be able to perform all of the manufacturing operations, but it is desirable to develop some degree of specialization within the group. The wide range of wage rates paid skilled workmen is due largely to specialization, although seniority and other factors necessitate lesser wage ranges within the specialized groups.

Layout and shear mechanics will command the highest wages. Layout work involves locating holes, cuts, edges, and bend lines in accordance with details of shop drawings. Work also involves center-punching holes, cuts, and edges and marking contract and piece numbers on the sheet metal parts. The mechanic's responsibilities as a power-shear operator include setting up and operating power-shear equipment, setting stop gauges, aligning material, and performing shearing operations on the machine. The high cost of stainless steel necessitates efficient use of the material. Each layout and shear mechanic is charged with keeping waste to a minimum.

Other specializations include welders, grinders and finishers, and machine operators (other than power-shear operators). Welders trained to use both resistance welding apparatus and hand welding equipment can command wages just below those of a layout and shear mechanic. In this case it is the superior skill required for welding stainless steel compared with other common sheet metals instead of the high cost of the material which necessitates paying stainless steel welders relatively higher wages than welders of other metals.

Grinders and finishers and machine operators (other than power-shear operators) are the lowest paid specializations in the skilled workman group.

Wages for the six helpers will vary exclusively with the length of time spent with the company. A five-year apprenticeship is standard for the area and provides sufficient time for training in all the aspects of stainless steel fabrication required by the company.

Indirect Labor and Administration. Annual indirect labor and administrative costs of $40,700 will be incurred by the plant. Estimated wages and salaries for the six necessary personnel are as follows:

Plant manager-engineer-salesman	$12,000 per year
Engineer-salesman	9,000 per year
Shop foreman	7,300 per year
Draftsman	5,200 per year
Cost control clerk-office manager	4,200 per year
Stock clerk-shipping clerk	3,000 per year
	$40,700 per year

Indirect labor and administrative functions not listed above, such as bookkeeping, secretarial duties, and some maintenance work, may be purchased on a part-time basis or by annual contract. Costs for such functions are considered expenses for outside services rather than indirect labor and administrative wage and salary expenses in this analysis.

Because of the size of the projected plant, selected personnel will need to perform more than one function. The plant manager, for example, should also be an engineer and a salesman.

His duties as plant manager include general supervision of the various operations of the company, planning for methods and product improvement, responsibility for purchasing all materials and major supply items, and estimating the quantity of materials needed for the various custom fabrication jobs. The last function should be performed in conjunction with the shop foreman.

His duties as an engineer include preparing and supervising the preparation of shop blueprints and drawings, estimating costs to be used for bidding on jobs, and preparing purchase requisitions for special materials required for particular jobs which are not carried in stock. Many of these duties will also be part of his job as a salesman of custom-fabricated food service equipment. A second combination engineer-salesman should be a part of the indirect

and administrative force in order to strengthen the company's efforts in these two areas.

The shop foreman, in addition to supervising production and maintenance, should be solely responsible for scheduling individual jobs. He should be charged with estimating the quantity of materials needed for individual jobs (in conjunction with the general manager), approving the purchase of materials and supplies in the absence of the general manager, and implementing those methods improvements and plans for new equipment which have been approved by the general manager.

The draftsman should be charged only with preparing shop blueprints and drawings and maintaining files for those prints which are likely to be used in future jobs.

The duties of the cost control clerk-office manager include preparing work orders, maintaining perpetual stores records, preparing purchase orders, checking vendors' invoices, costing and extending material requisitions and job cards, maintaining payroll records, maintaining work in progress and completed jobs summaries and files, and preparing customers' invoices.

The stock clerk-shipping clerk should prepare requisitions for and receive all materials and supplies, maintain storerooms, issue all materials and supplies upon receipt of a properly approved requisition, record materials issued on shop orders, and make periodic test-counts of materials so that the cost clerk can compare them with perpetual records. As shipping clerk he should prepare shipping orders and supervise loading and shipping of all merchandise to customers.

Annual Costs and Profits

An outline of estimated costs and profits for the plant is presented in Table 2. Supplementary information is given in Tables 3 and 4 and in the preceding text. Of the cost items shown in Table 2, the 38% of sales allocated for direct materials and supplies is the largest.

Most of the $114,000 annual cost for direct materials and supplies is needed for the purchase of stainless steel sheet. Materials such as angle, tubing, threaded rods, and bars compose a small portion of the total. Among

the limited supplies requirements, various abrasives are the only significant purchase.

Table 2

PROJECTED STATEMENT OF PROFIT AND LOSS

		Per Cent of Sales
Sales	$300,000	100.0
Direct Materials and Supplies	114,000	38.0
Direct Labor	63,000	21.0
Other Manufacturing Expense (See Table 3)	59,700	19.9
Cost of Goods Sold	236,700	78.9
Gross Profit	63,300	21.1
Selling, General, and Administrative Expense (See Table 4)	45,200	15.1
Profit before Federal Income Tax	18,100	6.0
Profit after Federal Income Tax	14,100	4.7

Because of the active competition of both foreign and domestic producers, markets for stainless steel sheet are depressed in the area. This situation should make possible raw materials costs significantly lower than shown in Table 2, at least temporarily. Another factor which may lower raw materials costs is the imminent establishment of a stainless steel custom finisher in the Atlanta area. It will be possible to purchase a large quantity of sheet with one finish and have it polished to the desired variety of finishes en route to the plant.

Among the potential raw material suppliers in the north Georgia area is the newest addition to the Carroll County metalworking complex. The stainless steel tube which this company produces is used in fabricating cafeteria rails. Another Carroll County firm produces hardware and fittings for food service equipment.

Tables 3 and 4 show projected company costs for Social Security, Workmen's Compensation, and company pension and health plans of $8,000 and $2,000 respectively. Fringe benefits are fairly liberal among Carroll County metalworking

firms, compared with other local industries. All firms participate in life and hospitalization insurance programs. Some form of retirement plan is in effect at three of the four firms interviewed. In addition, five paid holidays per year are standard in the industry, and all except one company give a one-week vacation with pay after one year, two weeks after five years.

Costs in Tables 2, 3, and 4 are calculated on the basis of the maximum total capital requirement of $217,500 indicated in Table 1. Excluding from selling, general, and administrative expense the $5,000 allocated for interest on borrowed capital (Table 4), the over-all return on investment, including the $14,100 annual profit (Table 2), would be $19,100, or 8.8%. Return on the recommended capital investment of $140,000 shown in Table 1 would be about 13%.

Table 3

OTHER MANUFACTURING EXPENSE

Indirect Labor		
Shop foreman	$ 7,300	
Draftsman	5,200	
Cost control clerk-office manager	4,200	
Stock clerk-shipping clerk	3,000	$19,700
Other Labor Costs		
Company costs for Social Security, Workmen's Compensation, and company pension and health plans (both direct and indirect labor)		8,000
Supplies		
Manufacturing supplies and factory tools and supplies		15,000
Outside Services		
Heat, light, power, water	$ 2,500	
Freight and drayage	1,000	
Repair work	2,500	6,000
Others		
Depreciation	$ 9,000	
Insurance	1,000	
Miscellaneous	1,000	11,000
Total (19.9% of sales)		$59,700

Table 4

SELLING, GENERAL, AND ADMINISTRATIVE EXPENSE

Wages and Salaries		
Plant manager-engineer-salesman	$12,000	
Engineer-salesman	9,000	
		$21,000
Others		
Company costs for Social Security, Workmen's Compensation, and company pension and health plans	$ 2,000	
Office supplies, dues, and subscriptions	1,500	
Depreciation and rent (office space and equipment)	500	
Interest paid	5,000	
Secretarial, bookkeeping, legal and auditing expense	4,000	
Administrative and selling travel and related expense	2,200	
Telephone, telegraph, and postage	1,800	
Advertising and printing	2,000	
Licenses and taxes (except Federal income tax)	1,200	
Bad debts	3,000	
Miscellaneous	1,000	
		24,200
Total (15.1% of sales)		$45,200